

REMARKS

The current Office Action has been reviewed and carefully considered.

Claims 17 and 18 have been added. Claims 1-16 are pending in this application, of which claims 1 and 7 are the independent claims. Claim 15 has been amended. NONE OF THE INDEPENDENT CLAIMS HAVE BEEN AMENDED.

Reconsideration of the claims, as amended and in view of the following remarks, is respectfully requested.

The specification was objected to as failing to provide proper antecedent basis for the claimed subject matter. Specifically, the phrase “predetermined number” in claims 1, 7 and 16 and the subject matter of claim 15 were cited.

Support for the phrase “predetermined number” as applied to counters in claim 1 finds support in the specification (e.g., page 8, line 10: “majority”; line 16 “all”; line 18: “all”). Accordingly, said predetermined number is equal to said majority, as stated, for example, in claim 16. One of ordinary skill in the art would understand that a system designer, for example, determines that a majority of the counters, which is a specific number, must “exceed the limit” before the “limit value is increased.” That determination by the system designer is properly characterized in claims 1 and 16 as a “predetermined number.” Likewise, the system designer may determine that all of the counters, which is a specific number, must “exceed the limit” before the “limit value is increased.” Accordingly, support exists in the specification for the claim 1 limitation “a predetermined number, which is at least a majority.”

As to claim 15, it has been amended to make moot the objection.

Reconsideration and withdrawal of the objection to the specification is respectfully requested.

Claim 15 was objected to for an informality which has been corrected.

Claims 1, 7 and 16 were rejected under 35 U.S.C. 112, first paragraph regarding the “predetermined number” limitation.

This rejection has been effectively addressed above in the specification objection section of this reply. Reconsideration and withdrawal of the rejection is respectfully requested.

Claims 2-3, 5-6, 8-9 and 11-15 were similarly rejected based on their dependency and likewise should have their respective rejections withdrawn.

Claim 15 was rejected for a negative limitation, that rejection being now moot due to amendment.

Claims 1-3, 5-9 and 11-13 and 16 stand rejected under 35 USC 103(a) as allegedly unpatentable over PCT Publication No. WO 95/10083 to Assar et al. (“Assar”).

Item 21 of the Office Action generally suggests that the applicant’s position on this rejection is unpersuasive, and states “it seems that Applicant is arguing . . .”

Firstly, the effort should be made to know what the applicant is saying.

Applicant’s position, as repeated below once again, is very different from how it is being characterized in item 21 of the Office Action.

Advantageously, the present invention allows the reclaiming of free space to occur independently of events executed to efficiently regulate uniform block wear levels. When data requiring less update is shifted to a block of high wear level, subsequent update of the data at the new location is not inhibited (page 7, lines 25-29: “To avoid the block 22 being erased many times more”). The present invention recognizes that, over time, as the limit value is raised successively, any difference in wear levels will smooth out. Consequently, it is not necessary to reclaim free space every time there is an increase in the limit value against which wear counts are compared. To the contrary, free space can be reclaimed at the appropriate optimum time.

Assar, by contrast, inhibits further update of the shifted data at the new location. At the moment all blocks exceed the limit value, there is no alternative but to immediately reclaim free space, regardless of the system impact with regard to, for example, power requirements (Assar, page 3, lines 1-3; page 8, line 36 to page 9, line 8).

Claim 1 recites “wherein the blocks from said variety have an associated counter for counting the number of mutations in the block concerned, and a limit value is increased when a predetermined number, which is at least the majority, of the counters of the blocks from said variety exceed the limit value, said determining being based on said limit value and a value of the counter of the first block (22).”

Item 9 of the Office Action concedes that the reference does not disclose the above-shown, underlined limitation of claim 1, but alleges that increasing the limit value in lieu of clearing the counters would have been “an obvious matter of design choice.” However, Assar clears the erase inhibit flags concurrently with clearing the

counters. What would have been the motivation for increasing the field size for the wearout leveling count and for the limit value? Not only is more storage required, but more resources are consumed in comparing the two quantities due to their larger size. Redesigning Assar to resemble the invention as recited in claim 1 would not have been obvious for at least the above-stated reasons.

Claim 7 recites the same above-quoted limitation, and is likewise deemed to be non-obvious over Assar.

Claim 1-3, 5-9 and 11-13, 15 and 16 stand rejected under 35 U.S.C. 103(a) as unpatentable over Assar in view of U.S. Patent No. 6,000,006 to Bruce et al. (“Bruce”).

Item 22 of the Office Action misleadingly refers to the section of the Bruce reference “that Applicant quotes” in referring to lines 55-59 of column 2 of Bruce. Instead, the previous Office Action quoted this passage, and the current Office Action, in item 10, page 8, line 3, once again cites this passage.

Item 10 of the Office Action suggests that lines 55-59 of column 2 of Bruce offer motivation for reconfiguring Assar to feature the invention as recited in claims 1 and 7. The passage states “While these flash memories systems are useful, a more effective flash memory system is desired . . .” The flash memories described above that passage, however, are different than that of Assar. Line 31, for example, states “Periodically clearing the erase counters is undesirable because there is no way to determine the total number of erase/write cycles to a given block . . . their erase counters are periodically cleared to zero regardless of usage.” Assar, by contrast does not clear

the erase counters until all blocks have the identical amount of usage (page 20, line 36 to page 21, line 2). Accordingly, Bruce fails to provide motivation to modify Assar to feature the limitations of the present invention as recited in claims 1 and 7. At least for this reason, claim 1 is not rendered obvious by the cited references.

The new idea on motivation introduced by the current Office Action as set forth in item 10 is that lines 31-33 of Bruce suggest the disadvantage of periodically clearing erase counters. From this statement, the Examiner uses impermissible hindsight gained from reading some combination of the instant specification and claims to arrive at the notion of avoiding this disadvantage by redesigning Assar, with all of its overhead in clearing *en masse* erase counters and other values, to raise the limit instead of clearing these values. The allegation of obviousness lacks merit.

Claim 15 depends from claim 1, and is not rendered obvious by the proposed combination of references at least for the same reasons. Support claim 15 as amended is found in the specification (e.g., page 7, lines 25-29: "To avoid the block 22 being erased many more times . . . selecting a block whose counter has a lower value . . ."; page 6, line 25: "computer system"). **In other words, the data from that selected block, which is copied to "the first block (22)," may still be mutated (unlike in Assar), but probably will not be mutated "many more times" due to the lower-usage characteristic of the data.**

As to the remaining rejected claims, they each depend from one of the base claims and are likewise deemed to be obvious for at least the same reasons.

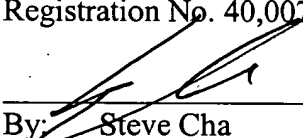
Claims 17-18 have been added to further emphasize aspects of the invention. Support for claim 17 is found in the specification (e.g., (e.g., page 7, lines 25-29: "To avoid the block 22 being erased many more times . . . selecting a block whose counter has a lower value . . ."). Support for claim 18 is found in the specification (e.g., page 8, lines 16 and 18).

For all the foregoing reasons, it is respectfully submitted that all the present claims are patentable in view of the cited references. A Notice of Allowance is respectfully requested.

Respectfully submitted,

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Date: September 16, 2003


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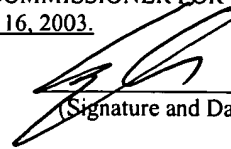
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 9/16/03
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